Remarks/Arguments:

This response accompanies a request for continued examination. Applicants have amended claims 1-3, as supported throughout the specification, for example, at pg. 8, line 9 through pg. 9, line 4, of the substitute specification, and Figures 1-12. Applicants have also added new claim 26, as supported in Figures 11 and 12, and Example 2. The amendments and new claim 26 introduce no new matter.

Applicants note that EP Patent 1 644 737 granted on the EP equivalent of the present application, in which the EPO considered and acknowledged patentability of similar claims, including the "flow track" language. A copy of EP 1 644 737 is attached hereto.

Rejections Under 35 U.S.C. § 112, First Paragraph

Claims 1-3 and 6-15 stand rejected as allegedly failing to comply with the written description requirement. While it is Applicants' position that the specification clearly describes "flow tracks," Applicants amended the claims to eliminate this term, thereby removing the basis for the rejection.

To the extent the Office would maintain the rejection against the amended claims, Applicants disagree. Applicants submit herewith a declaration of Dr. Peter Schwind, previously filed in co-pending application 10/563,659. Although this declaration addresses particular rejections in the '659 application, Applicants note that the present rejections under 35 U.S.C. §112 are nearly identical to those of the '659 application. Accordingly, the declaration is relevant to the present rejections. Applicants also note that Dr. Peter Schwind is a named inventor on both the '659 and present applications.

As explained in the declaration and shown in Exhibit B, it is possible to position the groups of indicator zones on a single membrane such that the liquid sample flows through only a single group without the need for a divider or barrier. An example of the device shown in Exhibit B is described in Example 3 of the specification. Thus, the specification adequately describes the claimed subject matter.

With respect to the claim amendments, Applicants note that the specification generally, and more particularly the drawings make clear that the claimed devices do not include a physical divider between indicator zones, and that a sample is capable of freely flowing through from the application zone to the absorption region through more than one indicator zone.

Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 1-3 and 6-15 stand rejected as allegedly indefinite. For at least the following reasons, Applicants submit that the claim amendments submitted herewith remove the basis for the rejection.

Applicants have deleted reference to "flow tracks."

The Office Action states claim 1 is vague because it is allegedly unclear if the indicator zones also function as detection zones and due to the term "conjugate pad" in claim 13. It is explicitly stated in the specification, however, that "[t]he bonding reactions between the analyte and the bonding element are detected in the indicator zone." See pg. 8, lines 23 to 24 of the substitute spec. (emphasis added). Further, the conjugate pad recited in claim 13 is an exemplary embodiment. The function of a conjugate pad is described clearly on, for example, pg. 11, lines 18-31 and pg. 24, lines 4-18 of the specification.

With respect to claim 3, the Office Action states that the letters in the claim are unclear. Applicants submit that claim 3, as amended, clearly recites "the indicator zones are arranged in a V-, W-, M-, N-shape or a linear row." One of skill in the art would readily understand these arrangements. See also substitute spec. pg. 9, lines 4-11. Thus, claim 3 is clear, and the rejection should be withdrawn.

With respect to claim 12, Applicants submit the sealing element is described throughout the specification and is clear in the Figures. For example, pg. 18, lines 5-19 describe the form and function of the sealing element in detail. Also, Figures 1-11 provide further understanding of the sealing element and, specifically, Figures 1 and 2 showing sealing element 4. Because claim 12 is clear, the rejection should be withdrawn.

Rejections Under 35 U.S.C. § 103

Claims 1-3 and 7-15 stand rejected as obvious over U.S. Patent No. 7,303,923 ("Hardman") in view of WO 88/08534 ("May") and U.S. Patent No. 4,943,522 ("Eisinger"). Claims 1-3 and 7-15 stand rejected as unpatentable over U.S. Patent No. 5,770,458 ("Klimov") in view of Eisinger. Claims 1-3, 6-11, and 13-15 stand rejected as unpatentable over U.S. Patent No. 5,559,041 ("Kang") in view of Eisinger. Applicants disagree.

Claims 1-3 and 7-15 Hardman in view of May and Eisinger

These references alone or in combination do not teach the limitations of claim 1. Hardman describes a device which comprises (a) a substrate comprising (i) a porous material

capable of chromatographically transporting a liquid and (ii) one or more test reagents for an assay provided on the porous material; and (b) a water-impermeable coating polymer attached to the porous material so as to define a continuous bibulous compartment. In addition to the missing elements recognized in the Office Action, Hardman additionally fails to teach or disclose: (1) simultaneous determination of cellular and plasmatic parameters; and (2) a single membrane with at least two indicator zones positioned on the membrane substantially parallel and absent a physical separator between indicator zones.

Hardman and May are directed to the determination of soluble analytes, not cellularly bonded analytes. The invention relates to the simultaneous determination of cellular and plasmatic parameters in the same assay and on the same membrane. In the present assay, the cellular parameter is determined directly on the cell without prior solubilisation. Prior to the invention, it was generally assumed for decades by a person of ordinary skill in the art that the presence of cells would be disturbing when determining the plasmatic parameter in soluble form. Based on this understanding, it was the established method to separately determine the cellular parameters from the plasmatic parameters due to the requirements of different devices and assay conditions. Before the invention, it was necessary to separate serum/plasma from the cells before the cellular and plasmatic parameters could be determined. This laborious separation step, however, is no longer required in the claimed invention, which facilitates efficient and fast simultaneous determination of cellular and plasmatic parameters from whole blood in one step. As Hardman and May are directed to soluble analytes and not cellularly bonded analytes, they do not teach or suggest the simultaneous determination of cellular and plasmatic parameters in the same assay and on the same membrane.

The skilled artisan intending to solve the technical problem underlying the claimed invention, *e.g.*, the simultaneous determination of a cellular and a plasmatic parameter, would not embark from a reference which is limited to soluble analytes. It is clear that substantially different devices, *e.g.*, the matrix material and different assay conditions, are required to be suitable for accommodation of cellularly bonded analytes.

While Eisinger relates to the determination of cellularly bonded analytes, it teaches away from the claimed invention. Eisinger mentions that for the determination of cellular and plasmatic parameters, the cells have to be removed before determining the plasmatic parameters (see Example 3, column 22, lines 60 to 68), which teaches away from the claimed invention. In addition, Eisinger applies the plasma separated from the cells for the typing of the antibodies using known donor erythrocytes, which again teaches away from the claimed

invention. Eisinger requires a separation step of plasma from cells, which is not required by the claimed invention. Accordingly, a skilled person upon reading Hardman, May, and Eisinger, and even combining the teachings thereof, would not arrive at the device as claimed.

Secondly, Hardman discloses a bibulous compartment with a plurality of channels. Hardman requires separate membranes and a physical barrier to separate the channels to detect more than one analyte. Claim 1, as currently amended, recites "the at least two indicator zones are positioned on the membrane substantially parallel and absent a physical separator between indicator zones." Thus, dividers or barriers are not necessary for the claimed invention.

May does not remedy the deficiencies of Hardman. May does not teach or suggest a plurality of indication zones arranged in parallel on a single membrane and does not allow for testing of multiple analytes on a single test strip. May discloses a single indicator zone on a single membrane, multiple indicator zones in series, or multiple membranes in parallel. See pgs. 11 and 12 of May. Also, May discloses a plurality of detection zones, but does not disclose use of at least two types of indicator particles of which at least one type being erythrocytes. May does not disclose a single membrane comprising a first indicator zone containing a bonding element for binding a cellularly bound analyte and a second indicator zone containing a bonding element for binding an analyte contained in plasma on the same membrane. Thus, even if a skilled person were to combine the teachings of Hardman and May, they would not arrive at the device as claimed.

Eisinger does not remedy the deficiencies of Hardman and May. Eisinger discloses a device and method for detecting blood group antigens. Eisinger does not disclose use of at least two types of indicator particles of which at least one type being erythrocytes, nor does Eisinger disclose a single membrane comprising a first indicator zone contains a bonding element for binding a cellularly bound analyte and a second indicator zone containing a bonding element for binding an analyte contained in plasma on the same membrane. Thus, a skilled person upon reading Hardman, May, and Eisinger and even combining the teachings thereof would not arrive at the device as claimed. Accordingly, *prima facie* obviousness has not been established, and withdrawal of the rejections is warranted.

Claims 1-3 and 7-15 Klimov in view of Eisinger

Claims 1-3 and 7-15 stand rejected as unpatentable over Klimov in view of Eisinger. Similar to the deficiencies discussed above for Hardman and May, Klimov fails to teach or

disclose: (1) simultaneous determination of cellular and plasmatic parameters; and (2) a single membrane with at least two indicator zones are positioned on the membrane substantially parallel and absent a physical separator between indicator zones.

Klimov relates to the determination of soluble analytes, not cellularly bonded analytes, and it does not teach or suggest the simultaneous determination of cellular and plasmatic parameters in the same assay and on the same membrane. The indicator zones of Klimov are present on different membranes: one runs in the main membrane and the second permeates into the top membrane. See col. 7, lines 40-44 of Klimov. The claimed invention, however, has indicator zones present on the same single membrane. Klimov does not disclose use of at least two types of indicator particles of which at least one type being erythrocytes, nor does Klimov disclose a single membrane comprising a first indicator zone contains a bonding element for binding a cellularly bound analyte and a second indicator zone containing a bonding element for binding an analyte contained in plasma on the same membrane.

As discussed above with respect to Eisinger, it does not teach the simultaneous determination of cellular and plasma parameters, and does not remedy the deficiencies of Klimov. Therefore, a skilled person at the time of the invention, even in combining the teachings of Klimov and Eisinger, would not reach the device as claimed. Accordingly, *prima facie* obviousness has not been established, and withdrawal of the rejections is warranted.

Claims 1-3, 6-11, and 13-15 Kang in view of Eisinger

Claims 1-3, 6-11, and 13-15 stand rejected over Kang in view of Eisinger. Kang discloses an immunochemical assay device comprising a base membrane with (i) a reservoir pad; (ii) a wicking membrane with two indicator zones; and (iii) at least one filter zone. Kang also does not teach or disclose the determination of cellularly bonded analytes, and it does not teach or suggest the simultaneous determination of cellular and plasmatic parameters in the same assay and on the same membrane. As discussed above with respect to Eisinger, it fails to remedy the deficiencies of Kang. Accordingly, a person skilled in the art would not consider using the device of Kang in the claimed invention for simultaneous and qualitative or quantitative determination of a plurality of analytes, wherein at least one analyte is a cellularly bonded analyte. Therefore, a skilled person at the time of the invention, even combining the teachings of Kang and Eisinger, would not reach the device as claimed. Accordingly, *prima facie* obviousness has not been established, and withdrawal of the rejections is warranted.

Hardman, May, Klimov, Kang, and Eisinger

Even if one combined Hardman, May, Klimov or Kang with Eisinger, the combination would fail since the matrix materials and assay conditions of Hardman, May, Klimov or Kang are designed for separation of soluble analytes because, for example, the pore size is too small to allow penetration of cells. Thus, the modified device in accordance with the Office Action's allegations would not work for the simultaneous determination of cellular and plasmatic parameters. Furthermore, it should be noted that the commercialization of the embodiment according to Eisinger is practically impossible. No blood grouping or other immunohematological diagnostic assay has been put on the market based on the teaching of Eisinger.

Double Patenting

Claims 1-5 and 7-15 stand provisionally rejected on the grounds of nonstatutory obviousness-type double patenting over claims 1-9 of co-pending U.S. Application No. 10/563,659. Applicants request that the rejection be held in abeyance pending an indication of allowable subject matter.

Conclusion

Applicants respectfully request reconsideration and withdrawal of the various rejections in light of the amendments and remarks made herein, and the declaration of Dr. Peter Schwind and its accompanying exhibits submitted herewith. A notice of allowance is requested.

Respectfully submitted,

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JLE/BAC/kpc

Dated: June 8, 2009

Attachments: Declaration of Dr. Peter Schwind with:
Exhibit A, *Curriculum Vitae* of Dr. Peter Schwind
Exhibit B, Representative images of an embodiment of the claimed devices
EP Patent 1 644 737

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